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ABSTRACT

Major trends in library technology and technology in general, as indicated by information gathered through internal development work at the Dallas Public Library, professional readings, and interviews with experts, are discussed. Trends covered are: (1) internal library services focusing on a total systems approach to library automation; (2) networking of library services with emphasis on bibliographic data sharing through the proposed national network; (3) new technologies and new applications of existing ones in relation to libraries and other agencies; (4) the library as an information utility and marketing of its services as such; (5) sociological changes that will affect the changing library role; (6) library staff and facility changes to support these technological innovations. (MBR)

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THE ROLE OF TECHNOLOGY FOR THE DALLAS PUBLIC LIBRARY IN LONG RANGE PLANNING

by

Christine L. Borgman

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THE ROLE OF TECHNOLOGY FOR THE DALLAS PUBLIC LIBRARY IN LONG RANGE PLANNING

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This paper is a combination of a number of different kinds of research. It covers first, internal developmental work which has been done here at Dallas Public Library, second, professional readings relating to technology and library automation and third, a number of interviews which were done with experts in the Dallas/Denton area. The latter, which is sometimes referred to as the "invisible college" technique, was extremely beneficial in getting current up-to-date views of people working in various areas of library technology, information retrieval, networking, general marketing, and other technology. A list of the people interviewed is attached to this paper. My reading and discussions have shown a number of trends which relate to library technology and to technology in general. Most notably, we have found that technology is moving faster than applications are available to keep up with it. Also, the economics of technology in general and of the publishing industry in particular are changing very rapidly. The market place is already showing feasible trade offs in technology versus current materials acquisitions and manual operations. The sum total of these trends makes this a critical time in planning and forces a rethinking in the role of the library as an information resource center. It has already been shown that the technology will rapidly create new forms of access to information as well as expanding on forms of technology that are already available. The library world needs to establish its leadership now and fulfill its true role in providing the access to information resources. Otherwise the private sector, which stands to gain a great profit on these technologies, will usurp the role and libraries will be left behind.

Trends in technology which directly affect the library's role and functional operations can be roughly divided into several categories. For the sake of discussion in this paper, they are here divided, but the areas distinctly overlap in defining the role of the library. These major sections, which will be covered in this paper, are first, systems internal to library operations and specifically to Dallas Public Library, such as are presently under development. Second, the National Network as has been variously proposed by the National Commission on Libraries and Information Science, the Library of Congress, the Ohio College Library Center, the AMIGOS Bibliographic Council, the American Library Association, and a number of organizations and individual writers. The third section to be covered is other technologies which will affect the publishing industry, the educational system, the role of the individual patron and his/her access to information, (such as personal computing systems) and the role of the library in delivery of information to the public. Fourth is the role of the library in a technological world; the library as an information utility and marketing of the services as such. Fifth are presented some of the sociological changes which will enter into this changing role and sixth, changes in facilities and staffing of the library to support the upcoming functional and operational changes.

Dallas Public Library Automation

The first major section is systems internal to the Dallas Public Library. The main thrust of our internal systems work will be along the lines we have already established as the present Five Year Plan for Library Automation in conjunction with the City of Dallas Data Services Department. This is, of course, a total systems approach to library automation, covering internal systems such as Cataloging, Acquisitions, and Circulation, which then interface with the public service aspects of the total Library operation. Parts of this program will

Dallas Public Library Automation (Continued)

include access to all cataloged holdings of the Library system by any and all agencies simultaneously; access to outstanding records of the Library system such as materials on-order and in-process; up-to-date verification and selection information for collection development; accurate accounting information; an efficient circulation and reserve system; the ability to not only know what is held by the Library but what is currently on the shelves (and for items that are out, when they're due back in). Also included will be tracking of materials from the original search through withdrawal of materials, further management control of operations at a detail level, and considerably more output reports to management than are currently available. The total system will include extensive tracking and analysis of the collected information. Individual agencies will have a better track of the status of their own operations and will have access to up-to-date information currently available only to upper levels of the organization.

Beyond the completion of the Five Year Plan, the real improvements will be in making the information more current than is possible (or feasible) with present systems. We will need to work toward more real time systems rather than batch-oriented systems. This means that reporting and recording of the information would be instantaneously available rather than waiting for an overnight or weekly process as is presently necessary in several cases. More data would be maintained online, accessible through terminals, and fewer paper reports would be printed. There would probably be more equipment available, such as terminals for various managers to access systems, rather than the somewhat limited terminal equipment we currently have. This equipment would be multi-purpose, with access to a variety of different Library systems. We would move further toward electronic

Dallas Public Library Automation (Continued)

mail and computer message systems and attempt to track personnel and staff support systems.

The present philosophy of faster, more efficient, and more accurate control of internal operations will continue. The real changes in systems internal to Dallas Public Library will be in improving the methods of producing this better control of our own information.

Current trends in technical processes and maintenance of systems imply that it will continue to be cost effective for us to maintain our own centralized processing systems. For operations such as cataloging and searching, where shared access to data is necessary and beneficial, we will access centralized data bases such as OCLC or BALLOTS. Most other operations which don't require shared access to data will remain internal; such as our book processing and material acquisitions. It's cheaper to keep data of only local interest, such as circulation records, locally rather than transporting it to remote points. This is particularly true when the remote points have no practical use of that information. This will be discussed further in the networking and resource sharing sections.

Networking and Resour e Sharing

The next major sectio to discuss is networking and our role in it. There are a number of reasons for oing into networking which will be discussed before outlining the actual details of ow such a network will be built and how we would become involved in it. As publishing costs continue to rise and the flood of information continues, while at the same time library budgets are not growing to meet the increased costs, the need for sharing resources with other libraries becomes more and more critical. We will find over the next five to twenty years a considerable change in the structure of library systems and the philosophy of service. As costs increase, it becomes less and less feasible to meet all the needs of the people all of the time. It becomes more important to worry about the user and getting as much information to him/her as quickly as possible than it is to worry about the autonomy of the individual library system. It has already been stated that the primary goal of the National Commission on Libraries and Information Science is to provide every individual access to all his/her information needs regardless of his/her location. William Welch, the Deputy Librarian of Congress, stated at the Pittsburgh Resource Sharing Conference that libraries have reached the turning point; the area of great collection building is at an end; the age of the client centered library is upon us.' He also feels that the future must be based upon the sharing of resources and that the adoption of online catalogs may be the most significant change in this type of access. Already the Library of Congress has two hundred terminals accessing its central data base of an online catalog.

What kind of resources can we share? There are a number of different resources that we have at hand right now. Among these are money, people, applied technology, data, paper, developmental technology, physical facilities, organizational and social structures, and our environment. Of these, the most logical to share is data because

Networking and Resource Sharing (Continued)

of its access time, transportability, and low turnaround time. In sharing things such as paper or people we have to consider how labor intensive it is to move things and other inherent problems. Data, however, can be shared readily through computer systems and electronic communication systems and be cost effective at the same time. In the case of libraries, the most logical data to share is bibliographic data. We spend a large portion of our funds in acquiring various forms of bibliographic data from books, journals, and other print and non-print media.

One of the first places to look is where interlibrary loan funds are currently being spent. Over half of all interlibrary loan transactions are for periodical and journal articles. This material is expensive and short-lived and therefore, is quite logical to be shared. Several proposals have already been made for federal funding for a National Serials Holding Bank. This would allow fewer copies to be purchased while still providing ready access to everyone who needs it.

Book prices are increasing at a rate comparable to serials prices and the storage and processing cost of books makes it even higher. In 1975, the average book purchase price was $16.50 and yet a study by King Research showed that over and above that $16.50 is a $51.12 price which includes acquisitions, storage, and circulation costs. When the per copy price of purchase and maintenance becomes this high we then have to start looking at trade-offs between the amount of material that needs to be purchased and the amount of material that needs to be shared with other libraries. When comparing the interlibrary loan cost of $7.25 per copy loaned and $9.61 per copy borrowed, it shows that four transactions is the break-even point for purchase where it is cheaper to buy than to borrow. The number of books in a library's collection compared to the book usage decreases proportionately. This means that the more books the less usage per book. The same study showed that 77% of the books in a collection have less than

Networking and Resource Sharing (Continued)

or equal to five transactions each. This implies that we will need to do more borrowing and less buying. Certainly someone has to buy the materials in the first place for them to be available to borrow. This is where the resource sharing comes in. If we can buy them cooperatively, doing regional collection development, and have materials available on a hierarchical basis, then materials necessary in the immediate area may be stored by the immediate library, materials needed only in a regional area may be stored at a regional location, and so on, up to a national level. Such a system must be optimized to achieve cost effectiveness at a break-even level. Other technologies are going to drastically influence this balance such as publishing on demand. New technology such as micro-publishing of journals and electronic publishing over the next ten or twenty years will bring substantial changes in publishing economics and trends. Similar developments in the use of union catalogs, both in computer-output-microfilm (COM) and online, will reduce staff costs in access to these information resources. Union catalogs can be cheaply operated because a clerk can search them. It would seem that if properly designed, a large percentage of patrons would be capable of doing their own searching also.

The reasons for resource sharing are well established, but what of the optimum structure of such a network? The views on this vary a great deal between the proponents of the National Network, and the private sector takes a somewhat different view than the public sector. The reader is referred to the documents produced by individual organizations for specific structures. The following is an overview of the typical structures, with consideration for how the Dallas Public Library or other individual libraries fit into the network. The best single work for discussion of this is the book, Library Networks, by Susan K. Martin of the University of California, Berkeley. Most of the following references are from that particular publication. She describes a number of

Networking and Resource Sharing (Continued)

types of networks which are available today. Typical are networks which support technical processing, reference data bases and commercial services, and are usually organized and controlled by libraries, information centers, consortia, or commercial firms. The technical characteristics of networks may not be suitable for all applications of library functions. Functions that incorporate data which can or must be shared with other libraries is appropriate. The most logical functions are cataloging, acquisitions, and interlibrary loan. She states that applications such as circulation, serials check-in, and fiscal accounting rely upon local idiosyncracies for a larger portion of local data. "An attempt to incorporate these applications into a network system would be hampered by an inefficient use of telecommunication links and shared data," states Ms. Martin.

Other items to take into consideration are bibliographic and performance standards. The standards are the easier part to establish. Standards such as MARC, ISBN, and the Anglo American Cataloging Rules (AACR) are fairly well established and accepted. The less tangible issues such as performance standards, pricing, and administrative structures are more difficult. The National Commission on Libraries and Information Science and the Library of Congress are working on these issues.

Technological developments are providing more routes for expansion. Construction of the network for the 1980's involves some of the following considerations:

1) Network resources need to be housed in regional locations and in large computing systems. They would hold large bibliographic data bases, have communication concentrators, and switching among libraries. There would also be direct service centers for libraries without access to local computer facilities or who were not consortia members.

Networking and Resource Sharing (Continued)

2) Regions will be interconnected by communication links including phone lines, Telenet and Tymnet services, microwave, and probably satellite transmission by the year 2000. The Library of Congress will be a node in the National Network. Its bibliographic system will be the base of this network. Counterparts in other nations will serve the same purpose. "OCLC or the organization that evolves from it, will play a major role in the development of the national network,"states Ms. Martin.

3) Many computers or terminals in libraries will access data directly. The required data such as the cataloging record would be copied into local storage and could then be used in local applications such as moving the data into a circulation system or a COM catalog system. This would reduce the rekeying of data considerably by allowing a library or an individual staff member to directly search a national data base to identify information. Then, without having to key it back into the library's own system, the data could be moved from that file into the library's file for use in whatever operations were deemed necessary.

The model of a medium sized library participating in such a network would have some of the following components: The library would have a mini-computer with telecommunications capabilities and a large disc drive. The disc would hold a data base of full or abbreviated bibliographic records, local holdings, fund files, bindery control, and the like. As material is cataloged, the mini-computer is used to request the bibliographic data from the regional data base or from a national data base, if necessary. Local data such as the call number is supplied to the network to maintain the network union list. The full bibliographic record may or may not reside at the

Networking and Resource Sharing (Continued)

library. It may be sufficient to maintain only a truncated record locally and access the regional data base when the complete record is necessary. This would be used to obtain contents notes and data of this genre.

This proposed model ties in fairly well with the design that Dallas Public Library has already developed. We are carrying what is essentially a truncated MARC record for our own system. This is a fixed length record which has almost the entire cataloging record with the exception of some variable length portions, such as the contents notes and place of publication. This gives us sufficient data to operate our acquisitions system, circulation system, and our online and microfilm catalogs. We are, of course, tied into OCLC which holds usually complete bibliographic records for materials that we have cataloged through OCLC. One operation that is not presently done is our full call number or local editing of the record going back to OCLC. (BALLOTS is capable of doing this, but OCLC is not). In the case of a regional center, such as AMIGOS, the local portion of such an OCLC file could then be carried in the AMIGOS computer system. If our data base directly interfaced with the regional data base, we could access from our own terminals the remainder of the full information when needed, without bearing the cost of supporting it on our system. The technical problems have not yet been worked out to match up those forms of records, but it is more a matter of software development, than a lack of available technolology.

Susan K. Martin also notes this design allows linkage of reference and processing functions to allow public service units to access online processing systems. This also is parallel to the design that Dallas Public Library has developed to link our management service units and our public service units by allowing public service general purpose terminals into materials selection files, on-order files, and in-

Networking and Resource Sharing (Continued)

process files. This capability will give them complete status on the management services end of the materials which are going to public service.

Ms. Martin further feels that it will be a giant leap forward in the state of networking when links between bibliographic data and holdings information can be achieved. This would produce a radically different approach to information. This involves expanding on the union list principle as used in the design of MBDB. The DPL union list (MBDB) ties circulation information and holdings information into our cataloging records. When we have completed our systems implementation five or six years down the line, we will then be able to find out if the Library owns a particular title, what agencies within the Library own it, if it is on the shelves or in circulation, and if in circulation, when it is to be returned. An extension of this to which Ms. Martin seems to refer, would be a connection of commercial data bases and library holdings of the same data. Presently, searching a data base such as held by the Lockheed/DIALOG or the SDC/ORBIT systems will identify relevant bibliographic items to the search topic. Presently, the search is an end in itself and the user is expected to identify locations where the items may be obtained. A link such as Ms. Martin speaks would mean that the user would do one search and both identify relevant material and receive a status report retrieved from a union list which would indicate where those particular items were held. There will be problems in developing this kind of interface between commercial information storage and retrieval systems and libraries, but it is technically possible to do so. This should be one of the capabilites which we will work toward in the long range in providing full access to information.

Another consideration in a national network is the acquisitions link. The suggestion as stated in Susan K. Martin's outline for networks is that a library may select

Networking and Resource Sharing (Continued)

materials through a machine-readable file, probably by a method where a person would sit at a terminal and search to identify materials that were desired, (the data base would be something equivalent to Books in Print), then immediately create a record for the library selection file, or order directly off that record. Vendors can provide materials to the library, having received the order through an online or terminal link. Dallas Public Library is already incorporating such concepts into its systems design. Some of the technologies herein described can be obtained from commercial vendors in 1977. Vendors are also able to bill, in machine-readable form, directly to the library's accounting systems. Today both Brodart and Baker and Taylor (and probably other vendors) are offering systems quite similar to this, where a library, for a nominal fee, can have online access to the vendor's search and inventory files. The actual data contained in the files of those two vendors varies, but they generally offer information on their warehouse holdings of materials and the records contain various types of status levels (such as whether in print, available only from publisher, etc.) Orders can be initiated from that search point and directly ordered from the vendor. The vendor is then able to bill the library back through the same system. The vendors appear to be willing to offer this service at a reasonable fee because it cuts costs for them as well. If they can receive, in machine-readable form, an order without their having to handle the library's paper work in the library's format, it saves them costs at their end as well.

There are a number of administrative issues involved in developing a national library network. Two major problems at hand are organizational structures and a communications setup that will allow interface of independently developed systems.

The organizational problem is a need to combine different types of libraries in

Networking and Resource Sharing (Continued)

the public and private sectors, and a determination of who would be responsible for administration or advising of such systems. It is currently deemed better if such problems are resolved from within, rather than defined from the outside such as would be the case for federal control of such a network.

The communications design implies that technological compatibility is critical. Standards must be stressed both for content representation and data communications, per Ms. Martin. As a means of definition, the standard layout of a MARC record would be the MARC 'content representation' of a bibliographic record. Data communications involves considerations of whether a telephone or another network would be used, and the types of equipment involved to interface between computer systems. Presently, neither the computer interfaces or software (programming) are fully compatible with each other. These issues are currently receiving much attention in both the library and computing fields. Hopefully, viable standards can be established in the reasonable future.

Another major consideration is that we must design systems so that rekeying from one system to another is unnecessary. We may have to modify data through programming as moved from one system to another but that is readily feasible. This is one of the major problems currently in the market place. There are virtually no "turnkey" or complete packaged library automation systems available. There are individual systems available for acquisitions, for cataloging, and for circulation, but none of them, at least that I know of, will directly interface from one to another. This means that a library that was unable for various reasons to do its own development (which bears a high cost) but wishes to implement these multiple systems would be forced to buy separately an acquisitions system, a cataloging system,

Networking and Resource Sharing (Continued)

and a circulation system. Presently, without direct interfaces between the systems, the library would be forced to duplicate the data from one system to another by rekeying it. This is obviously inefficient, to say nothing of the multiple support costs, but until the vendors are willing to design their systems so they can interface in modules or so that efficient and cost effective total systems packages are available, any library that wants to do a total systems approach such as DPL is attempting, is forced to do internal development. For some places this may be feasible; DPL has a particular advantage in having direct City support, but over the long run, if many times replicated over the nation, a case develops of reinventing the wheel a number of times.

A similar consideration is that authority control and bibliographic standards are necessary for commonly used data. A standard would be the MARC records, Library of Congress cataloging standards (AACR), and a standard authority list like the ones being developed for both names and subjects by the Library of Congress. The subject list is already available on machine-readable tape; a similar list for names will be available within the next several years. This is a problem which must be attended to for true resource sharing. If libraries do not adhere to a common standard, identifying the same records in different systems can become virtually impossible. Though systems such as OCLC do have limitations for local data, and in many ways drive costs up over the long run, if we're to interface with other systems certain concessions must be made to working within a national standard.

Susan K. Martin closes the last part of her article with a discussion of some of the implications for the library world involved in national networking. She presents the case that to date most systems have been implemented without radically

Networking and Resource Sharing (Continued)

changing the tools or the methods of staff or of patrons. New systems are currently being used to assist in maintaining the manual system or to replace the manual system without a change in philosophy or intellectual approach. With the new access to online files, technical services is going to change and as libraries begin to network more, they will no longer completely support their patrons out of their immediate collections. This will mean that the boundaries of library services and of library jobs will change radically as more and more of this networking technology is implemented. She feels that libraries must place more emphasis on training and education for staff and for patrons. This educational process is critical to support any kind of new system, computerized or otherwise (I feel that this cannot be over emphasized) and that if properly used this can be a very good opportunity to bring users up to date with current library technology. I would very much concur with this for a number of reasons. Any kind of library tools require training. There are problems with present tools and there are problems with future tools but if we are going to train people anyway, it gives us a good opportunity to train people in the proper forms of doing things. In many ways it is just as easy to train them adequately in new ways of doing things as it is to bring them up-to-date with what we are doing now. Whether we always admit it to ourselves, all of our patrons are not thoroughly acquainted with the uses of the present card catalog. If we were to train them in using the present system we might just as well train them in using computer-output-microfilm catalogs or online catalogs. The more that they're willing to become involved in learning new systems the better service we'll be able to give and the better service they'll be able to obtain for themselves. This is a critical consideration both for patrons and for staff, and can be the turning point for any system, library or otherwise.

Another source consulted in this research was the paper, The Library Bibliographic

Networking and Resource Sharing (Continued)

Component of the National Library and Information Network, which was prepared by the Library of Congress Network Advisory Group. This paper discusses some of the goals of the network and some of the progress being made thus far. A lot of the goals tend to cover the same kind of things that Susan K. Martin covered in her paper, but the most salient point of the paper by the Library of Congress is the current progress toward this network. This is the achievement of online access to Library of Congress MARC records through a computer to computer connection with the Research Libraries Group in the Northeast. It was noted in Library Journal within the last month that this link is already operational and that there is an online connection between these libraries in the Northeast and the Library of Congress. This means that we are beyond the point of having an online network as a future goal and that this online service is technically possible today. The most serious constraints to building this national network are not technical ones because the technical ones are already beginning to be conquered. The serious constraints have to do with the administration of such a network. Alfonse Trezza, who is the head of the National Commission on Libraries and Information Science, feels that funding is not the core of the problem. "We can get the funding tomorrow but we are too afraid to share materials to move forward on the problem," he said at the Pittsburgh Resource Sharing Conference. Libraries of all sizes have unique things to contribute to such a network; it doesn't need to be (and can't be) the kind of network where the larger ones completely support the smaller ones. Large libraries in a network need to be compensated, but the contribution of small libraries should not be underestimated. Roderick G. Swartz, State Librarian of Washington, said that in his state one rural library loaned 1,400 volumes and borrowed 1,200 volumes in one year and this was not a terribly unusual occurence. He also noted that such special libraries tend to have subject depth in areas that larger libraries frequently don't have. Jim Kennedy, Executive Director of our own

Networking and Resource Sharing (Continued)

AMIGOS, has the same feelings as far as getting cooperation from libraries. He says that although an organization such as AMIGOS can foster a network, without the cooperation of the individual libraries they cannot move forward. He feels that regions need to develop their interlibrary loan systems locally and develop hierarchical data bases and networks. One of the main problems that he sees with the cooperation is that the individual libraries are not seeing the big picture of the networking and resource sharing. This would make sense as far as reasons for reluctance of individual libraries to participate. It takes a number of libraries participating for resource sharing to become a practical reality.

William Rouse, another participant at the University of Pittsburgh Resource Sharing Conference, summed it up by saying that people would rather own things and that therefore libraries would rather own things than borrow things. This is a problem more than just with libraries but with the Western culture which is based around the concept of ownership. We must get over this gap in order for resource sharing to be successful.

The last critical consideration in involvement with resource sharing for Dallas Public Library, as well as any other library, is how would we individually tie into these systems. There are a number of considerations, as previously described. We are in a special case among similar libraries around the United States in that we have already done a fair part of our own development and intend to continue doing so. If we were in the same position as most other large public libraries who had minimal investment to date, the considerations would be different in getting in on the ground floor of systems development as part of a large network. Our position is atypical in that we have to work more along the lines of linking our systems to others rather than building cooperatively the basic system. In spite of the need for participation in this national

Networking and Resource Sharing (Continued)

system, for immediate purposes it seems that we must continue to build to relieve our own immediate needs rather than waiting some period of years to start over on another basis. We must, however, bear in mind that our present system must be flexible enough to interface with the other systems when the time comes. This will be a necessity when resource sharing on a large scale becomes a reality.

The most logical approach for us then in resource sharing, after building our own system (from a 1977 viewpoint), is to offer access to our system to other libraries in return for our access to their system(s). We would hold our own shelf list information and circulation information independent of any outside systems but leave access to our own union list, title holdings, and agency holdings available to other libraries for interlibrary loan or other resource sharing purposes and we in turn could access their systems. The interfaces then must be built in as compatible a method as possible. Information which is of value to the region could be held in a regional data base as previously described with AMIGOS. Another valuable application of this is a union list of serials, with detailed holdings information on individual libraries. There may be options of copying portions of our data base into a separate regional center which would mean other libraries could access one point rather than multiple points to determine what local holdings are. Another choice, in technical considerations, would be to leave the data bases separate and make the interface to them transparent to the user. That is, the user would make one query to the central system and the system itself would search the different data bases and supply the information back to the user. The user need not be aware that multiple data bases have been accessed. Dallas Public Library does have an immediate limitation in that we are not working at the national standard of MARC records. That over a long run leaves us two alternatives; the first is to upgrade our records to the MARC standard. Presently, the MARC format

Networking and Resource Sharing (Continued)

is more expensive to maintain, though as computing costs go down that may not be the limitation that it presently is today. The second alternative is to define the standard relationship between MARC records and our records, and in essence, preprocess them to make them look like MARC records. This might allow us to interface with systems designed to handle MARC records, without having to build much of our own software. In many ways this is going to have to be part of the solution to the problem. As long as people are building systems in separate places and they consider themselves "professionals" in various systems they will likely be inclined to feel their way is best and modify to local options. A simple transition to make everyone meet one national standard is highly unlikely. It seems then that we must be capable of working as close to a national standard as possible, while at the same time working to design the best possible interfaces between various systems.

Technologies External to the Library

The next major section to discuss is one which I find personally fascinating and that is the outlook for other technologies, both new technologies and new applications of existing technologies in both the immediate library world and in the total event world, which will in some way affect our personal and organizational lives. This kind of information is difficult to get from the literature; very few people are sitting down and writing long range papers on new technologies or if they are, current indexing and abstracting systems are such that it is very difficult to identify them. So most of this information has been gained from talking to a number of experts in the Dallas/Denton area. Several of them are from related areas in academe. Th[illegible] people are doing considerable research and are in the forefront of many new technological innovations before the world of applications begins to deal in them. Some of the most exciting ones fall in the area of communications and data storage. One of the first ones that comes to mind which will make a drastic change in our ability to use computer systems is voice input and voice output. If we could do input to a system through voice we could have an immediate and vast improvement both in data input and in our ability to negotiate with systems. Similarly, with voice output also available, we could dial into a system, ask a question and get a response back in kind.

Another useful way to input data to systems and especially in building the initial storage, is through optical character recognition (OCR). Right now it's an efficient and cheap way of input if the material is first keyed into a machine-readable OCR type font. There are a very limited number of fonts available, and typically individual OCR reading devices only allow one form each.

Technologies External to the Library (Continued)

Systems which will allow almost universal type fonts exist but they're still very expensive. Recognition Equipment,Inc. (REI) has designed one which is being used in mail sorting and rumor has it that IBM recently produced a cheaper, more efficient model. One that is available already from REI reads about 80 percent of letter mail that comes through, not only zip codes but full street addresses for sorting and distribution. When this becomes a cheap and otherwise feasible resource we can input data from virtually any written medium without being forced to rekey it. This will mean that rather than rewriting and keying book reviews or selection information we could simply pick up the review and run a wand across it and input it to our system. This has tremendous capabilities for personal computing systems in the home; you could build your recipe files or accounting files or anything else you wish to store and later retrieve. With an OCR wand you could pick up your present format, pass the wand over the desired material, perhaps run the wand over selected words again which would then be index words. Your data input and indexing would be complete at that point. Right now we must rework and key our data to store it in this matter.

Another of the very useful technologies will be telefacsimile transfer. This is something already available to us but the cost and time involved are currently quite expensive. Just within the last week, however, a news release in the Dallas Morning News described a transceiver that is able to cut the time in sending of a business letter through telefacsimile transfer from the current four to six minutes down to 20 seconds. The 3M Corporation has introduced this product. They already feel that this equipment has the potential of replacing as much as one-third of current letter mail. They are stressing the use at the moment of this transceiver for high priority mail and legal documents. One of the features

Technologies External to the Library (Continued)

included is the ability to simultaneously send and receive stacks of documents with no operator present. This machine is available for $295.00 a month now. The uses of this for interlibrary loan, for transmission of material between agencies and for transmission through a larger network, are many. Data from a National Serials Data Bank or some kind of separate hard-copy location seems most appropriate for transmission. There are a number of applications already being proposed; for instance, one with the U. S. Postal Service. The Commission on Postal Service, which has finished a six month study of the U. S. Postal Service, has recommended that the Postal Service provide tele-facsimile transfer publically because nearly 25 percent of all first class mail will probably be diverted to electronic transmission systems by 1985.

Another area which will have major impact is publishing on disc, or online computer storage. "Electronic publishing" where data will be available without ever having the material reach typesetting in the first place, may be common. Much material is presently input to disc (online computer storage) to be phototypeset. However, if it can be put on disc it can be published back out from the disc on demand or remain on the disc without ever printing it on paper. It is already thought that for scientific and technical journals,particularly the more esoteric ones, it's cheaper to publish the material on disc than to go to a typesetter because this information is so little used and it goes out of date so quickly. On a time-sharing computer system (such as ours), one copy can be stored on disc for considerably less than multiple libraries can store paper copies. The information is available much sooner because the time lag in publishing is avoided. It's also cheaper to access material on disc than it is to get through interlibrary loan and considerably faster. An interlibrary loan

Technologies External to the Library (Continued)

today runs,under varying estimates, from $7.00 to $10.00 per transaction. This then becomes a trade-off for libraries over the initial costs of purchasing the material or of acquiring it through interlibrary loan. The present cost of serial subscriptions are extremely high and are expected to go much higher. When you consider several hundred thousand dollars a year spent on serials versus only accessing the portions of those serials which are actually going to be used, the potential for cost effective trade-offs is great. If, instead of spending the initial money on many of those subscriptions, the library offers free access through terminals to comparable material on disc, the patrons who need the information will have immediate access to it and the library won't have to store it or worry about it not being there when the patron wants it. It is stored once and is simultaneously available to all who need it.

A similar application is what is often called "hard copy on demand" from publishing on COM fiche. Once material is put in machine-readable form it can easily be produced into computer-output-microfilm (COM) and distributed very cheaply through the mails as fiche or film or stored with considerably less storage space than paper. Equipment such as Xerox is manufacturing can give hard copies off COM very quickly, at very high volume, and run for 24 hours a day. Corporations such as Xerox are already performing this kind of operation in-house, where management reports may be produced on fiche and distributed. Those who wish full copies for various reasons can simply order copies of whatever pages are requested. This will cut down on paper and storage costs and also change the trends in publishing and printing. Copies on demand from COM has applications for both library materials and office documents.

Technologies External to the Library (Continued)

As computer storage costs become cheaper and cheaper, more applications involving storage of large amounts of data become feasible. There's been talk for a long time about a bubble memory being developed which will store a vast amount of data in a very small space. Again, just within the last several weeks, Texas Instruments has announced their first bubble memory portable terminal. In one square inch of bubble memory 20,000 bits of information can be stored. The access to this storage is extremely high speed; indexed records can be accessed in this bubble memory in 15 thousandths of a second. This is an incredible speed, when compared to the several seconds or several minutes it takes to index records in a cassette system. The entire terminal costs less than $2700 and additional memories can be added for $500 a chip, each containing 20,000 bits of information, up to a total of 80,000 bits. Again, the day of fast cheap storage has already arrived.

Another fascinating development is that of personal computing systems. In 1970 it was predicted that by 1976 personal computing systems would be available for the price of an automobile. Already the trade-off is not the price of an automobile but the price of a color television set. There are computer stores even in the immediate Dallas area for people to purchase equipment for building their own systems. As these systems utilize existing components, such as a TV for the video display screen, an electric typewriter for an input mechanism and simple cassettes for cheap storage devices, the cost comes down and means that multi-purpose computing equipment can be available in the home. The next question is what will people begin to use these systems for? This is where a whole range of operations becomes available. Games will probably have some popularity as in things like Pong, at the moment, but will get old. There is not enough interest in playing games to support a versatile computer system; few hobbyists have the imagination to build games which will hold interest over

Technologies External to the Library (Continued)

long periods of time, like stochastic chess. Although packages will certainly be available for personal accounting systems to maintain household accounts, do income tax, and so on, the average man-in-the-street is not interested in doing "number-crunching" activities at home. What is far more reasonable is information storage and retrieval; a small home computer can readily store recipe files, a kitchen inventory, important documents, scrap book types of information, and various other data of personal interest. It's easy to conceive of storing your recipe file and indexing it by the various ingredients while at the same time maintaining your store of groceries against that recipe file. That means that your system could not only tell you when you needed to reorder eggs or toilet paper or whatever, it would tell you what from your recipe file could be made for dinner that night out of the ingredients that you presently have on hand. The possibilities for a free-standing system are endless depending on how much imagination the individual happens to have. The possibilities of personal computing systems when used as nodes in a network, however, go much much farther.

A personal computing system does not need to be limited to being a free standing system; rather, the possibilities for its usage are far better when it's considered as part of an information network. An individual can use his/her terminal to access other forms of information external to his/her own system. A person can, for instance, access the bank, the retail stores where accounts are held, locations which supply new information, new products, or the most logical of all, access the local library. The home terminal is then a node on the information network to access any of a number of available data bases. The kinds of information that people desire most appears to be current events

Technologies External to the Library (Continued)

and newspaper related forms of information; weather reports, local data, and various kinds of survival information. It's logical for the local public library to be the entity that builds this type of data base. How much, for instance, does one read of any day's newspaper? If newspapers are sufficiently indexed people can access whatever portions of them they desire. Systems like The New York Times Information Bank are already available but they do not adequately supply local information. It is very reasonable for the local library to index the information, such as the local newspapers, local weather reports, and other data, like descriptions of social service agencies, that have only local interest. Material of regional interest should be indexed and made available on a regional level, and national information should be available on a national level. This is where systems like The New York Times Information Bank come into play. One can then see a person being able to access the type of local and current events information he/she needs as well as getting into social services data bases of the sort that APL/CAT provides. The success of APL/CAT should show that people desire this kind of consumer and survival information. That is only a beginning, for there are a number of different varieties of APL/CATs that could be built in other service areas. There is no reason that the equivalent of the Yellow Pages or catalogs of various local merchants shouldn't be available in a data base. Local merchants would probably pay to have their catalogs made available to people, much less the library having to force them to surrender such information. If a catalog were available online, then people could go to their home systems and find out what retailer offers a particular product or service they require and various things about it, such as cost, hours of business, and inventory availability. It would be very nice to go to your electric typewriter and television set in your home and ask where an auto repair shop that is open

Technologies External to the Library (Continued)

at 6:00 A. M. and is within a reasonable towing distance of your home is located, or where one might find a brass floor lamp available within the desired price range. Data to support emergencies could also be available, like a 'hot line' of medical or police information.

These systems must be available with a natural language query capability. This means that a person could query their terminal, presently through a keyboard, asking a question in normal phraseology. At some future point, we may be able to ask the question orally, which is the equivalent of voice input to the system. This again is where the designing of interfaces between data bases becomes necessary. One can interrogate the immediate system with a natural language (like simple English or Spanish, as opposed to a computer language like FORTRAN) and have the system then access the various kinds of data bases which are appropriate to find the information. There might be levels of availability through the systems where local information was available free or for a small fee, and a higher fee would be charged if it were necessary to access it from a regional or national data base. If the question required a personal search to be done by a specialist in some area, the system might perhaps send a message back to the requestor stating that this was a special request and ask if it was to be held for a special search at higher costs. The requestor would have the option of having the search done or not; he/she would not automatically incur a total system usage fee without personal authorization.

The Role of the Library in a Technological World

The library is the logical storehouse for such data bases and also the logical indexing and access point to build these data bases. The library is the point where the primary source information should be acquired and then stored for access through the network.

Besides providing the data bases, the library is the logical point to check out software for these systems. If cassettes, floppy discs, or whatever other medium becomes the standard form for storage of programs and data, then there's no reason that the library cannot purchase such media containing software or other data as part of basic materials acquisition. Software packages such as accounting packages, information retrieval packages for the home, even various stored types of information, such as storytelling to be done over voice output, or data to be used in small home computing systems, like engineering formulas. Countless other kinds of data could be made available in this form. Again, this is one more extension of a basic collection development policy. These would become nonbook formats just as many others are today.

As can be seen the line between computing and other forms of access to information, such as cable television, becomes very fuzzy as the various technologies become more and more sophisticated. It's been discussed for quite a while that cable television could offer daily programming of materials and services available through the library and the prospective patron could respond through the same system to request information to be sent to the home.. There are various ways of doing this. The request could be keyed (typed in), or a light pen used to touch a point on a TV screen to select a particular piece of information. It seems that as the line between the systems becomes less well defined and as computing systems merge with the equipment and functions of other electronic devices, this true two way

The Role of the Library in a Technological World (Continued)

communication between the personal or home systems and centralized information resources such as the library, becomes more and more feasible.

The concept of the library as an "information utility" incorporates much of the technology described above. The "information utility" concept has been discussed in the literature, and during the course of this research was presented and elaborated by Dr. John Corbin of North Texas State University. He sees the library truly as an "information utility" or a service offered by the city similar to the way the city offers other utilities like water and gas and controls such services. The library, under this concept, is a full service information center with more than just published information. Survival information, as provided by APL/CAT, or by the Yellow Pages online, or retail merchants catalogs as previously discussed, makes the library more than just an access point to published materials. When the library is able to build the data bases and offer its patrons software packages to check out, it then becomes governable as a utility. For those who cannot afford to have their own terminals or other personal equipment at home, those pieces of equipment could belong to the city just as the gas meter belongs to the gas company. There are already a number of commercial or other private information services which are competing with the library system for access to information. Much social service information is provided privately through foundations or through government grants and other information is provided through public or private social services. John Corbin notes that the federal government has added another agency referred to as an information center just to identify for people what government services particular agencies offer. He feels that this is a duplication of effort and it should be the library's role to provide this kind of general information. There is definitely a market for it, because people who aren't getting such information from the library are willing to pay

to get it from other sources. His conclusion, as well as that of other writers, is that these kinds of access points are going to become available in the not so distant future and if the public library is not the one to provide it, commercial enterprise will pick this up for a profit and the libraries will be left behind.

Other considerations for the type of information the library may provide are the current and future uses of the library for research. Classic information science studies showed that scientific and technical persons presently use the library as at best a secondary source, and more frequently, a tertiary source for information. The primary channel of information for scientific and technical people is verbal communication with their peers. They will first go to another scientist in their lab or immediate work area to find information; the second place they will go is to their professional peers in other parts of the country or in other parts of the world, either by phone, by letter, or computer message systems, depending upon what is available to them. It has been shown that a scientist working in a particular area will go typically to one set of people that he/she knows is working on similar research. This group of people which are the set of contacts make up what is known as the "invisible college". The same information science research says that typically, only when scientific or technical researchers have exhausted this ready access to the invisible college will they go to the published literature. One of the main reasons for this is considered to be the time lag that it takes for data to get to the published literature. Access to the invisible college is more likely to provide primary source information which is the most current. The impact of this in relation to the library is what the channels will be for the primary, secondary, and tertiary

The Role of the Library in a Technological World (Continued)

sources of information in the light of new technologies. As primary source information becomes easier and easier for the researcher to obtain, the need for a source which provides only that secondary or tertiary source of published information will diminish proportionately. This phenomenon is already beginning to institutionalize itself as a side effect from computer message systems already in use.

Computer message systems are systems where one can go to a computer terminal and send a message either to one individual or mass mail to a series of individuals or particular stations. The message becomes independent of where the recipient is located. This means that a message can be sent to someone who has access to another terminal and who may log into the Central computer system at anytime. When this individual logs into the system, he/she will receive whatever messages have been sent to him/her regardless where he/she is physically located at the time. A computer message system already discussed at DPL is one that would replace "all units" memos where someone could be at one terminal and, for instance, send messages to every branch immediately without having to go through the week long process that it currently takes to have a message written, typed, mailed, and delivered to all the agencies. A recent article in EDP Analyzer describes some of the computer message systems already on the market. Several major companies are marketing them and a number of large organizations are subscribing to them for communications between members of their staff. There are a number of benefits from using systems like this. A computer message system, or CMS, avoids busy and unavailable situations; a message can be sent which is time independent and the person can receive it whenever he/she is ready to go back to the system. The messages are much better organized to retrieve and analyze; previously where there were handwritten notes, typed notes,

The Role of the Library in a Technological World (Continued)

and scribbled phone messages, there can now be a subject organized set of messages. It may also reduce travel because of the improved capability in communications. At a time when we are considering an energy crisis which will make travel more and more restrictive, the advantages of CMS make it quite feasible. There are problems involved, of course, in that there will be changes in procedures and one must learn to use a new medium. It means that managers up and down the line may be more aware of what is going on because of the speed of access and ability to readily disseminate a message to multiple points. Some of these may be advantages and may be disadvantages depending on how a system is set up.

One of the most successful computer message systems is the ARPAnet, which was developed by the Advanced Research Projects Administration in about 1972. This is a nationwide network of computer systems, mainly linked through academic and government institutions. This was not built initially as a computer message system but to allow a linking of computers so that people on any one computer in the network could access special programs or capabilities of other computers elsewhere in the network. A scientist might sign onto a computer in Pittsburgh and access UCLA's computer in Los Angeles and the response time would be such that you couldn't tell the computer wasn't in the next room. What developed through this was that a number of different researchers began using this system and using the CMS capabilities of it; it then became a logical extension of the classic "invisible college". Researchers using the system were contacting their peers elsewhere in the country who were working in the same area. One of the findings in the use of ARPAnet was that scientists who began to use this computer message system to directly contact people working in the same areas as themselves used the published literature less and less. They also published materials less

The Role of the Library in a Technological World (Continued)

frequently because they were able to send their work out through the system with a "request for comment". They received responses and immediate critiques of their research from their peers without waiting for the turnaround time involved in publishing. This has tremendous impact for the library over the long range. When you figure that in many cases the library, which holds largely published literature, is already a tertiary source of information for scientific and technical researchers, the advent of computerized message systems means the importance of the library as a warehouse of published information will diminish. The library, therefore, is a logical node on the computer message system to support the entire network of information and research needs.

This then adds to the reasoning behind the concept of the library as an information utility. The library is the logical place to store and provide access to all the different kinds of information available to patrons, consumers, and the public in general. The library is the obvious information resource center to merge the competing resources of today.

Sociological Changes Which Will Affect the Library World

This section is a somewhat random discussion based on several of the different interviews that were done for this report. One of the things that has to be considered in looking at the technology as it will affect the library world between now and the year 2000, is competitors to library services which will develop at rates similar to the library's development. Among these are television, closed circuit TV, cable TV, and complete home entertainment centers. Will people be provided their information from the private sector, or from what is currently the broadcasting sector, or will the library absorb some of these roles? Another consideration, according to Richard Sperling, a Human Factors Specialist for the Xerox Corporation, is the different styles of thinking and working that people have. Fast access to data bases is very good for the person who thinks problems out, wants everything on his problem at once and will then sit down and go through it. In contrast to this is the typical engineer's style of going through a problem one component at a time. This type of researcher needs the capability to browse casually through the literature rather than working with a system that bears a "time pressure". Mr. Sperling feels that for as good as information retrieval systems are, one must take into consideration different types of thinking and different modes of operation that people typically have. Systems must be sufficiently flexible to work with more than one particular kind of mind set. As Mr. Sperling says, one must first define the user population. This population, especially when considering a public library, may have diverse needs so diverse designs are needed.

Marjorie Henderson, Technical Librarian for the Office Systems Division of the Xerox Corporation, has worked with innovations such as microfiche and library computing systems since the early 1950's, and feels the need for merging of

Sociological Changes Which Will Affect the Library World (Continued)

these different types of technologies. She says that in the early 1950's the talk of computers and libraries was very intense; people feared losing their jobs to computers and it was predicted that most library operations would be absorbed into computing functions. To date this has not happened; she feels this is true because there will always be a need for professional staff. A merging of processes, partially electronic access to systems and partially traditional, is necessary. Ms. Henderson feels people aren't going to change their basic reading needs and warehousing of the materials will still be done by libraries. Dr. John Miniter, of Texas Women's University, takes a somewhat different view. He feels that by the year 2000, we will have a satellite just for libraries, we will have instant access to the Library of Congress, and if any books remain, they'll be fiction. He also feels that only about two-thirds of today's degreed librarians and about half the clerical staff will be needed. Dr. Miniter believes the library may not even need a building by the year 2000. We will be working largely as electronic information centers.

One person in the computing field to whom I talked took the most conservative approach I encountered. This was the feeling that computing and technology has greatly matured and will level off, much as the auto industry has leveled off, in new products. He feels that even IBM corporate planning documents show a leveling off of computing technology. In contrast to this, a professor of computing feels that our present ways of computing use too much resources and we will change to do at least the same things better and cheaper or we won't survive. In response to the consideration of technology leveling off, an attorney who was interviewed presented the footnote that the patent office in 1899 proposed that its functions be ceased because everything had been invented that the world

Sociological Changes Which Will Affect the Library World (Continued)

would ever need.

While a number of people interviewed were very much in favor of personal computing systems and felt they would be widely used, another group of people felt that home computing has a great nuisance factor. People like routine tasks and will continue to do things as they have always done them. Similarly, even those who are quite capable of managing home computing systems don't plan ahead enough to do so much as their grocery shopping that way. Several people had strong feelings that the information resources must go to the people (rather than the people coming to the resources) either through nodes such as home terminals or by moving library services farther out into residential areas. Urban sprawl was mentioned, as people will get farther from downtown and be more reluctant to return there. They will require either access to services in their immediate residential areas or access to nodes on an information network such as terminals.

An interesting view of data collection and the future of data bases was presented by Deverett Bickston, head of the Industrial Information Services at Southern Methodist University. He says,"everyones got a data base"; the question is whether they will be publicly released. The oil companies have exhaustive data bases on oil field information but this is confidential information which is not readily going to be made available. Similarly, marketing data is internally available in private industries, but very difficult for anyone outside to access. Government policies state that they will release information, but Mr. Bickston feels that it may not really happen. The Privacy Act and various security of records acts are forcing more and more open records by the government and soon by other organizations. What Mr. Bickston feels may happen, is that the data which has until now been recorded but not made available, may not be recorded in the first

Sociological Changes Which Will Affect the Library World (Continued)

place. If organizations resist recording information in order to stop it being made available, this will cause a definite change in our access to information. Dev Bickston is also one of the persons who emphasized that technology has surpassed people's abilities to use it; that we are, indeed, in an "Alice in Wonderland" type of situation. He also states this in relation to National Science Foundation considerations. Because of this change NSF is moving toward more emphasis on the user of information. There's beginning to be so much more information available than any organization can cope with that it may do more good to educate the user to what is available.

Changes in the educational system will rapidly affect the library. Public school systems are introducing students to computing at a very early age. Elementary school students,even in the primary grades, are learning to use terminals for computer-assisted-instruction (CAI). CAI networks already exist, and much academic computing involves CAI. Junior and senior high school students can take programming courses in their schools. At the recent Dallas area National Science Fair, a number of computing exhibits were presented. I spent an extended period of time at the Fair talking to a high school junior who had set up a student scheduling system for a Richardson high school. He and his classmates had access to computing equipment and were learning computing concepts that were not available to me until graduate school. This is the next generation of library users. These people are already comfortable with computing systems and high speed access to information. They are the ones who will demand a technologically up-to-date level of library service.

Changes in Staffing and Facilities

Changes in staff patterns were addressed by several different people interviewed. The predominant change seen was more reliance on indexers and abstractors. The libraries will need people who are skilled in vocabulary control, authority control, information storage, and all aspects of information storage and retrieval systems. With the ability to store data more cheaply and access it more rapidly, the amount of descriptive data on library holdings that can be maintained should increase. This means that materials could receive better data for control than cataloging and classification alone can provide. Indexing and abstracting of materials provides far more complete access, but requires more work to create the record and to maintain it.

The need for better access to materials becomes critical as the volume of material to be searched grows. A small library can be adequately maintained by the Dewey Decimal Classification System, and a larger collection can be adequately maintained by the Library of Congress Classification System. Very large data bases, like OCLC or Science Citation Index, require multiple keyword access points, and preferably content access. The larger data bases grow, the more difficult it is to distinguish records, and the more distinct access points that are required per record. Multiple index terms and abstracting of the content are required to do this adequately.

Legal information centers have used this principle for many years. The field of law developed the concept of citation indexing with Shephard's Citations, which has been copied by Science Citation Index. Legal decisions are "headnoted" which is a type of abstracting, and classified, with multiple class numbers being given to many cases. Legal information systems, such as Westlaw or LEXIS, search the full text of the headnote and the full text of the decision, respectively.

Changes in Staffing and Facilities (Continued)

In this manner, legal information can be searched with respect to content, rather than to classification or general subject heading alone.

At present there is better access to legal literature than exists to general literature as supplied by public libraries. As the body of general information grows, the requirement for access to it grows. The library must find ways to make information more accessible than it is today. Doing the same operations of today faster will not provide this access. This is where the need for a change in intellectual approach, as Susan K. Martin stated, is needed.

Much of the responsibility of library staff in the future will be in designing data bases, indexing and abstracting materials for input, and storing and retrieving the information. The number of staff required is difficult to judge; but there will be a requirement for adequate professional staff to support information systems. As the amount of paper handling and keying decreases, the requirement for clerical staff will probably decrease.

Changes in facilities were not directly addressed by any of the interviewees or in any of the literature that I encountered. My conclusions from the various information I have covered are that we will need considerably more in the way of electronic facilities. The library will be a service center. We will need a number of terminals available both for staff use and for public use. Switching systems and therefore computer areas will be necessary. In our case, how much of the computing equipment would be handled physically within the Library and how much physically handled by Data Services is debatable. A definite conclusion is that more service areas which are flexible open spaces ready for multi-media will be needed. Everything from personal computing systems to video

Changes in Staffing and Facilities (Continued)

discs and recording mechanisms will be housed in the library. Perhaps even sound and video studios would be needed. The trend appears to be toward less material storage as the cost of paper materials and paper storage goes up. The trend is more toward electronic storage devices or microfilm and microfiche storage.

Summary

The overview I see of these various developments is that the role of the library as an information resource needs to be reconsidered in light of future technology. The library is moving from being a warehouse of published literature to a full service information resource and utility. The cost tradeouts have already begun. As more organizations buy their indexing and abstracting services on tape instead of hard copy, the tape cost is going down and the hard copy cost is going up. The cost of materials published on paper versus in microforms is beginning to change accordingly. The library needs to be as flexible as possible in moving toward both new types of service and new types of collection development policies. New material, such as data bases, software packages, video discs, and terminals may become some of the library materials of the future. Two important things that it seems necessary to keep in mind through this transition are the emphasis on education, both of patrons and of staff, and on the marketing and presentation of the role of the library.

As the library goes through transition and introduces new programs and new projects it is critical that staff and patrons be kept up to date with the changes in the organization. Much of implementing any kind of new system is the presentation with which it is made. The understanding of the people who will implement and operate the system are those who will ultimately make it work. This can be the weakest point in design of any system. If it is not adequately and properly received by the people it is there to serve, it will suffer and never be utilized as it was intended.

Comparably, the role of the library needs to be well presented to the community if the library is to serve those it is intended to serve. A critical consideration of the use of the library is the non-users and why they are non-users. If the library is going to be a utility and provide consumer and survival information to

Summary (Continued)

the public, the public needs to be aware that this service is there. One marketing person was interviewed specifically for this reason. His proposal was that it is time well spent to do full blown market studies before entering into new programs. An organization should identify the user population that it actually serves. The organization must go out and meet with that group of people as extensively as possible, then bounce new ideas and new proposals off those people. As systems are designed, test packages should be built which are then tested upon that user population and modified before being presented as a total system. Uses of marketing strategy such as this will not only help to best define the role of the library in a technological age, but design systems to best serve the public that is there to be served.

Respectfully submitted,

Christine L. Borgman 5/4/77

Christine L. Borgman
Librarian for Systems Development

APPENDIX: PERSONS INTERVIEWED FOR THIS REPORT

Linda Allmand, Chief of Branch Services, Dallas Public Library

Deverett Bickston, Industrial Information Services, Southern Methodist University

Ed Cole, Nonbook Development, Dallas Public Library

John Corbin, Library School, North Texas State University

Elizabeth Crabb, Northeast Texas Library System

William Dimitt, Marketing Analyst, Southwestern Life Insurance Company

Gary Gilliland, Attorney, private practice

Carl Hayes, Programmer, Sun Company

Marjorie Henderson, Technical Librarian, Xerox Corporation

Katherine P. Jagoe, Northeast Texas Library System

James Kennedy, AMIGOS Bibliographic Council

Robert R. Korfhage, Computer Science Department, Southern Methodist University

John Miniter, Library School, Texas Woman's University

George Mood, Attorney, Dallas Legal Services

Kenneth Roach, Nonbook Development, Dallas Public Library

Richard Sperling, Human Factors Specialist, Xerox Corporation

Julie Travis, Film Library, Dallas Public Library